

CLAIMS

Therefore, having thus described the invention, at least the following is claimed:

1. A method for flatproofing a tire and wheel assembly comprising the steps of:
 - supplying to a static mixer at least two materials which react together to create a foam;
 - mixing the reactant materials with the static mixer;
 - supplying nucleating gas to the static mixer at a pressure sufficient to entrain the gas in the mixture of reactant materials in the static mixer;
 - injecting the mixture of reactant materials with entrained gas into said tire and wheel assembly;
 - allowing the mixture of reactant materials to react within the tire to create a foam-fill within the tire; and
 - curing the foam-fill within the tire.
2. The method as defined in claim 1, wherein the reactant materials include a polyisocyanate and a polyol for reacting together to form a polyurethane foam.
3. The method as defined in claim 1, further comprising removing a valve stem from the tire and wheel assembly to form a valve stem opening.
4. The method as defined in claim 3, wherein injecting the mixture of reactant materials with entrained gas into the tire and wheel assembly comprises injecting the mixture through the valve stem opening.
5. The method as defined in claim 4, further comprising inserting a plug into the valve stem opening after injection is complete.
6. The method as defined in claim 1, further comprising mounting a tire on a rim and wheel to form said tire and wheel assembly.
7. The method as defined in claim 1, further comprising filling said tire and wheel assembly with air prior to injecting the mixture to stretch the tire.

8. The method as defined in claim 1, further comprising obtaining the size of the tire and wheel assembly to determine the amount of the mixture to be injected into said tire and wheel assembly.

9. The method as defined in claim 1, further comprising forming at least one vent hole in said tire prior to injecting the mixture.

10. The method as defined in claim 9, further comprising allowing the foam to rise in said tire and wheel assembly and allowing trapped air to escape through the vent hole in said tire.

11. The method as defined in claim 1, wherein injecting the mixture into said tire and wheel assembly comprises automatically injecting the amount of the mixture necessary to fill said tire and wheel assembly based on the size and/or weight of the tire and wheel assembly obtained.

12. The method as defined in claim 1, wherein the reactant materials are mixed and injected into the tire under ambient temperature conditions.

13. The method as defined in claim 1, wherein the reactant materials are mixed and injected into the tire under ambient pressure conditions.

14. The method as defined in claim 1, wherein injecting the mixture of reactant materials with entrained gas into the tire and wheel assembly comprises injecting the mixture through the valve stem.

15. The method as defined in claim 1, further comprising drilling a hole through the tire sidewall or wheel to form a valve stem opening.

16. The method as defined in claim 19, wherein injecting the mixture of reactant materials with entrained gas into the tire and wheel assembly comprises injecting the mixture through the hole created in the tire sidewall or wheel rim.

17. The method as defined in claim 1, wherein the tire and wheel assembly to be flatproofed is a tubed tire and wheel assembly.

18. A tire and wheel assembly wherein the tire is filled with a foam having a cellular structure of low density of about 30 lbs/ft³ or less.

19. The tire of claim 18, wherein the tire is filled with a polyurethane foam.

20. The tire of claim 18, wherein the foam has a density of about 14.5 lbs/ft³ or less.